We claim:

1. A riveting tool for forming a head on a rivet having a preformed rivet head and an elongated rivet shaft which extends longitudinally from the preformed head to a distal end, the tool comprising,

a support sleeve having a bore extending axially at least partway therethrough,

a riveter die slidably disposed in the bore, the riveter die extending axially from a forward end spaced proximate the rivet to a rearward end remote therefrom and including,

a secondary bore extending longitudinally substantially through the riveter die from the rearward end, the secondary bore having a lateral cross-sectional profile generally corresponding to that of the rivet shaft,

a head cavity formed in the forward end, the secondary bore being open into a rearward portion of the cavity, the head cavity having a shape generally corresponding to a shape of a preferred formed rivet head and having a size selected such that upon initial engagement of the riveter die with the rivet at least a portion of the rivet shaft locates within the secondary bore so as to be partially constrained against lateral deformation thereby,

a strike rod slidably received in the secondary bore, the strike rod being movable relative to the riveter die between a first position wherein a forwardmost face of said rod is located rearwardly from said cavity to a second position located forwardly therefrom, wherein the movement of the rod from the first to the second position engages the distal end of the rivet to compress and laterally deform a portion of the rivet shaft in the head cavity, and

a ram being selectively operable to move the strike rod from said first position to said second position.

2. A tool as claimed in claim 1 wherein said riveter die is movable between an extended position wherein said forward end is located forwardly so as to extend relative to said sleeve and

a retracted position wherein said riveter die is moved rearwardly therefrom, the tool further including,

a retaining member for limiting forward movement of the riveter die relative to the support sleeve past said extended position, and

a biasing member for resiliently biasing said riveter die to said extended position.

3. A tool as claimed in claim 2 wherein said strike rod is slidable within the second bore, the rod further including a retaining flange for limiting its forward sliding movement relative to said riveting die, when the riveter die is in the extended position, the strike rod being slidable such that the engagement of the distal end of the rivet with the forwardmost face substantially relocates the rod to the first position.

4. The tool as claimed in claim 3 wherein the retaining flange substantially prevents sliding movement of forwardmost face of the strike rod forwardly into the cavity.

5. The tool as claimed in claim 4 wherein in said second position said strike rod extends in said riveter die along said secondary bore substantially from rearward portion of said cavity to said rearward end of said riveter die.

6. A tool as claimed in claim 5 further including a button head support die sized to engagingly receive therein said preformed head, said button head die being configured to support and substantially prevent movement of said preformed head during operation of said ram.

7. A tool as claimed in claim 5 wherein the ram is operable to move the support sleeve, riveter die and strike rod forwardly relative to the rivet,

the tool further including a closure member engaging said support sleeve and being located a maximum distance rearwardly of the strike rod and riveter die, the closure member limiting rearward movement of the riveting die and the striking rod relative to the support sleeve, and

wherein said strike rod has an axial length selected greater than said maximum distance.

8. A tool as claimed in claim 5 further including an axially movable robot arm for positioning said tool with said secondary bore in substantial axial alignment with the shaft of a selected rivet, said support sleeve further comprises helical threads for removably coupling said sleeve to said arm for movement therewith.

9. A staking rivet tool for securing two workpieces together with a rivet, the rivet including a preformed head and an elongated rivet shaft extending from the preformed head to a distal end, the shaft having a length selected to permit its insertion through aligned rivet apertures formed in each of the workpieces so as to define a projecting end extending therepast, the tool being operable to form a head of the rivet and comprising,

a support sleeve having a generally cylindrical bore extending axially at least partway therethrough,

a riveter die slidably disposed in the bore, the riveter die extending axially from a forward end for positioning spaced proximate the workpieces to a rearward end remote therefrom and including,

a cylindrical secondary bore extending longitudinally through the riveter die from the forward end to the rearward end, the secondary bore having a lateral cross-sectional profile generally corresponding to that of the rivet shaft,

a head cavity formed in the forward end, the secondary bore being open into a rearward portion of the head cavity, the head cavity having a shape generally corresponding to a shape of a preferred formed rivet head and having a size selected such that upon initial engagement of the riveter die with the rivet, the projecting end of the rivet shaft locates at least partially within the secondary bore so as to be at least partially constrained against lateral deformation thereby and at least partially in the head cavity,

a strike rod slidably received in the secondary bore, the strike rod being selectively movable between a first position wherein a forwardmost face of said rod is spaced rearwardly from said cavity to a second position moved forward therefrom, wherein the movement of the

rod to the second position engages the distal end of the rivet to laterally deform the portion of the rivet shaft in the head cavity, and

a ram being selectively operable to move the strike rod from said first position to said second position.

10. The tool as claimed in claim 9 wherein said cavity is formed having a dimension selected whereby upon the initial engagement of the riveter die with the workpiece component at least about one third of the projecting end of the rivet shaft locates within the secondary bore so as to be partially constrained against lateral deformation thereby.

11. A tool as claimed in claim 9 wherein said riveter die is movable relative to the sleeve between an extended position wherein said forward end is moved forwardly so as to extend forwardly past to a front end of said sleeve and a retracted position wherein said forward end of the riveter die is moved rearwardly substantially flush with the front end,

the sleeve further including a retaining member for limiting forward movement of the riveter die past said extended position,

a biasing spring for resiliently biasing said riveter die to said extended position, and

wherein the strike rod includes a retaining flange for limiting its forward sliding movement relative to said riveting die, when the riveter die is in the extended position, the strike rod being slidable such that the engagement of the distal end of the rivet with the forwardmost face substantially relocates the strike rod to the first position.

12. The tool as claimed in claim 11 wherein the retaining flange substantially prevents sliding movement of forwardmost face of the strike rod forwardly into the cavity, and whereby in said second position said strike rod extends in said riveter die along said secondary bore substantially from rearward portion of said cavity to said rearward end of said riveter die.

13. A tool as claimed in claim 9 wherein the ram is operable to move the support sleeve, riveter die and strike rod forwardly relative to the workpieces,

the tool further including a closure member and being located a distance rearwardly of the strike rod and riveter die, the closure member engaging and limiting rearward movement of the riveting die and the striking rod relative to the support sleeve as the support sleeve is moved towards the workpiece.

14. A tool as claimed in claim 13 further including an axially movable robot arm for positioning said tool with said secondary bore in substantial axial alignment with the projecting end of the rivet, said support sleeve further comprises a mechanical coupler for removably coupling said sleeve to said arm for movement therewith.

15. A method of heading staking a rivet to secure together two workpieces, the workpieces each including a rivet opening formed therethrough,

the rivet including a preformed head and an elongated rivet shaft extending axially from the preformed head to a distal end, the shaft having an axial length selected to permit its insertion through the rivet openings of the workpieces when aligned and juxtaposed, so as to define a projecting end extending therepast,

the tool comprising,

a support sleeve having a generally cylindrical bore extending axially at least partway therethrough,

a riveter die slidably disposed in the bore, the riveter die extending axially from a forward end for positioning spaced proximate the workpieces to a rearward end remote therefrom and including,

a head cavity formed in the forward end,

a cylindrical smaller diameter die bore extending longitudinally through the riveter die substantially from a rearward portion of the head cavity to the rearward end, the secondary bore having a lateral cross-sectional profile generally corresponding to that of the rivet shaft,

the head cavity having a shape generally corresponding to a shape of a preferred formed rivet head and having a size selected such that upon initial engagement of the riveter die with the rivet at least a portion of the projecting end of the rivet shaft locates within the secondary bore so as to be at least partially constrained against lateral deformation thereby,

a strike rod slidably received in the secondary bore, the strike rod being selectively movable between a first position wherein a forwardmost face of said rod is spaced rearwardly from said cavity to a second position moved forward therefrom, wherein the movement of the rod to the second position engages the distal end of the rivet to compress and laterally deform a portion of the rivet shaft in the head cavity, and

a drive being selectively operable to move the strike rod from said first position to said second position,

wherein said workpieces are secured to each other by:

positioning the workpieces substantially in juxtaposition with the rivet openings of each workpiece being substantially aligned,

inserting the rivet shaft through the openings to move the preformed rivet head into substantial juxtaposed contact with a first of said workpieces, and with the projecting end extending outward beyond the second other workpiece,

positioning said riveter die in axial alignment with said rivet shaft,

moving said support sleeve axially into initial engagement with said second workpiece to locate at least a portion of said projecting end in said secondary bore, wherein contact with the rivet shaft slides said strike rod to the first position,

actuating said drive to move the strike rod forwardly towards said workpieces and said forward position, whereby upon axial compression of the rivet shaft the engagement of the portion of the rivet shaft in the secondary bore with the riveter die substantially prevents its

lateral deformation while effecting radial deformation of part of the projecting portion of the rivet shaft in the head cavity to at least partially form a formed rivet head.

16. The method of claim 15 wherein the strike rod has an axial length substantially corresponding to the length of the secondary bore, and the tool further includes a retention member for substantially limiting forward movement of the forward face of the strike rod into the cavity.

17. The method of claim 15 wherein said formed head is formed by staking and further wherein during activation of the drive supporting said preformed head in juxtaposed contact with said first workpiece.

18. The method of claim 15 wherein said drive comprises a robotic arm.

19. The method of claim 18 wherein the arm is operable to move the support sleeve, riveter die and strike rod forwardly relative to the workpieces,

the riveter die being slidable relative to the support sleeve between a forward extended position and a retracted position spaced rearwardly therefrom, the tool further including a biasing member for resiliently biasing the riveter die to the extended position, and

a closure member located a distance rearwardly of the strike rod and riveter die, the closure member engaging and limiting rearward movement of the riveting die and the striking rod relative to the support sleeve as the support sleeve is moved towards the workpiece.